WHAT IS CLAIMED IS:

1. A method for operating an optical disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a diamond-like carbon having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said diamond-like carbon;

wherein the number of pin-holes in said diamond-like carbon is $30/mm^2$ or less.

2. A method according to claim 1 wherein said protective film is formed on the surface of said optical disk without heating.

3. A method according to claim 1 wherein said optical disk memory is a compact disk.

4. A method according to claim 1 wherein film quality of said diamond-like carbon is measured in accordance with Raman spectroscopy.

5. A method according to claim 1 wherein the thickness of said diamond-like carbon is 50Å or more.

6. A method according to claim 1 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

7. A method according to claim 1 wherein said semiconductor laser light is a visible light.

8. A method for operating an optical disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a diamond-like carbon having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said diamond-like carbon;

wherein the number of pin-holes in said diamond-like carbon is $30/mm^2$ or less;

wherein said diamond-like carbon contains at least one of element selected from the group consisting of Si, B, N, P and F.

9. A method according to claim 8 wherein said protective film is formed on the surface of said optical disk without heating.

10. A method according to claim 8 wherein said optical disk memory is a compact disk.

11. A method according to claim 8 wherein film quality of said diamond-like carbon is measured in accordance with Raman spectroscopy.

12. A method according to claim 8 wherein the thickness of said diamond-like carbon is 50Å or more.

13. A method according to claim 8 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

14. A method according to claim 8 wherein said semiconductor laser light is a visible light

15. A method for operating an optical disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a diamond-like carbon having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said diamond-like carbon;

wherein the number of pin-holes in said diamond-like carbon is $30/mm^2$ or less.

16. A method according to claim 15 wherein said protective film is formed on the surface of said substrate without heating.

17. A method according to claim 15 wherein said optical disk memory is a compact disk.

18. A method according to claim 15 wherein film quality of said diamond-like carbon is measured in accordance with Raman spectroscopy.

19. A method according to claim 15 wherein the thickness of said diamond-like carbon is 50Å or more.

20. A method according to claim 15 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

21. A method according to claim 15 wherein said semiconductor laser light is a visible light.

22. A method for operating an optical disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a diamond-like carbon having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said diamond-like carbon;

wherein the number of pin-holes in said diamond-like carbon is $30/mm^2$ or less;

wherein said diamond-like carbon contains at least one of element selected from the group consisting of Si, B, N, P and F.

23. A method according to claim 22 wherein said protective film is formed on the surface of said substrate without heating.

24. A method according to claim 22 wherein said optical disk memory is a compact disk.

25. A method according to claim 22 wherein film quality of said diamond-like carbon is measured in accordance with Raman spectroscopy.

26. A method according to claim 22 wherein the thickness of said diamond-like carbon is 50Å or more.

27. A method according to claim 22 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

28. A method according to claim 22 wherein said semiconductor laser light is a visible light.

29. A method for operating an optical disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less.

30. A method according to claim 29 wherein said protective film is formed on the surface of said optical disk without heating.

31. A method according to claim 29 wherein said optical disk memory is a compact disk.

32. A method according to claim 29 wherein film quality of said hard-carbon coating is measured in accordance with Raman spectroscopy.

33. A method according to claim 29 wherein the thickness of said hard-carbon coating is 50Å or more.

34. A method according to claim 29 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

35. A method according to claim 29 wherein said semiconductor laser light is a visible light.

36. A method for operating an optical disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F.

37. A method according to claim 36 wherein said protective film is formed on the surface of said optical disk without heating.

38. A method according to claim 36 wherein said optical disk memory is a compact disk.

39. A method according to claim 36 wherein film quality of said hard-carbon coating is measured in accordance with Raman spectroscopy.

40. A method according to claim 36 wherein the thickness of said hard-carbon coating is 50Å or more.

41. A method according to claim 36 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

42. A method according to claim 36 wherein said semiconductor laser light is a visible light.

43. A method for operating an optical disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less.

44. A method according to claim 43 wherein said protective film is formed on the surface of said substrate without heating.

45. A method according to claim 43 wherein said optical disk memory is a compact disk.

46. A method according to claim 43 wherein film quality of said hard-carbon coating is measured in accordance with Raman spectroscopy.

47. A method according to claim 43 wherein the thickness of said hard-carbon coating is 50Å or more.

48. A method according to claim 43 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

49. A method according to claim 43 wherein said semiconductor laser light is a visible light.

50. A method for operating an optical disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F.

51. A method according to claim 50 wherein said protective film is formed on the surface of said substrate without heating.

52. A method according to claim 50 wherein said optical disk memory is a compact disk.

53. A method according to claim 50 wherein film quality of said hard-carbon coating is measured in accordance with Raman spectroscopy.

54. A method according to claim 50 wherein the thickness of said hard-carbon coating is 50Å or more.

55. A method according to claim 50 wherein said semiconductor laser light has a wavelength of 700 to 800 nm.

56. A method according to claim 50 wherein said semiconductor laser light is a visible light.